



S/N 09/945,507

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Leonard Forbes et al. Examiner: Son Dinh  
Serial No.: 09/945,507 Group Art Unit: 2824  
Filed: August 30, 2001 Docket: 1303.014US1  
Title: FLASH MEMORY WITH LOW TUNNEL BARRIER INTERPOLY INSULATORS

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COMMUNICATION CONCERNING RELATED APPLICATION(S)

MS RCE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Applicants would like to bring to the Examiner's attention the following related application(s) in the above-identified patent application:

<u>Serial/Patent No.</u>	<u>Filing Date</u>	<u>Attorney Docket</u>	<u>Title</u>
09/945395	August 30, 2001	1303.019US1	DRAM CELLS WITH REPRESSED FLOATING GATE MEMORY, LOW TUNNEL BARRIER INTERPOLY INSULATORS
09/943134	August 30, 2001	1303.020US1	PROGRAMMABLE ARRAY LOGIC OR MEMORY DEVICES WITH ASYMMETRICAL TUNNEL BARRIERS
09/945512	August 30, 2001	1303.027US1	IN SERVICE PROGRAMMABLE LOGIC ARRAYS WITH LOW TUNNEL BARRIER INTERPOLY INSULATORS
09/945554	August 30, 2001	1303.028US1	SRAM CELLS WITH REPRESSED FLOATING GATE MEMORY, LOW TUNNEL BARRIER INTERPOLY INSULATORS
09/945500	August 30, 2001	1303.029US1	PROGRAMMABLE MEMORY ADDRESS AND DECODE CIRCUITS WITH LOW TUNNEL BARRIER INTERPOLY INSULATORS
10/075484	February 12, 2002	1303.043US1	ASYMMETRIC BAND-GAP ENGINEERED NONVOLATILE MEMORY DEVICE
10/081818	February 20, 2002	1303.045US1	ATOMIC LAYER DEPOSITION OF METAL OXIDE AND/OR LOW ASYMMETRICAL TUNNEL BARRIER INTERPOLY INSULATORS

COMMUNICATION CONCERNING RELATED APPLICATIONS

Serial Number: 09/945,507

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Title: FLASH MEMORY WITH LOW TUNNEL BARRIER INTERPOLY INSULATORS

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Dkt: 1303.014US1

10/177096	June 21, 2002	1303.063US1	GRADED COMPOSITION METAL OXIDE TUNNEL BARRIER INTERPOLY INSULATORS
10/783695	February 20, 2004	1303.019US2	DRAM CELLS WITH REPRESSED FLOATING GATE MEMORY, LOW TUNNEL BARRIER INTERPOLY INSULATORS
10/781035	February 18, 2004	1303.063US2	GRADED COMPOSITION METAL OXIDE TUNNEL BARRIER INTERPOLY INSULATORS
10/788810	February 27, 2004	1303.027US2	IN SERVICE PROGRAMMABLE LOGIC ARRAYS WITH LOW TUNNEL BARRIER INTERPOLY INSULATORS
10/819550	April 7, 2004	1303.019US3	DRAM CELLS WITH REPRESSED FLOATING GATE MEMORY, LOW TUNNEL BARRIER INTERPOLY INSULATORS

Respectfully submitted,

LEONARD FORBES ET AL.

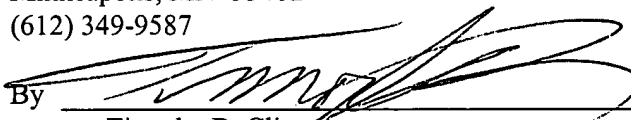
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Date

9 June '04

By



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Reg. No. 40,957

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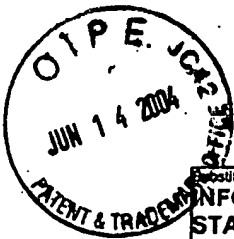
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Tina Kohut

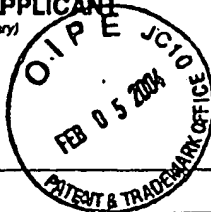
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Complete if Known	
Applicant Number	09/945,507
Filing Date	August 30, 2001
First Named Inventor	Forbes, Leonard
Group Art Unit	2824
Examiner Name	Dinh, Son
Attorney Docket No: 1303.014US1	

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## US PATENT DOCUMENTS

Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	Filing Date if Appropriate
CH	US-2001/0013621	08/16/2001	Nakazato, K	257	314	12/08/2000
	US-2001/0055838	12/27/2001	Walker, A J., et al.	438	129	08/13/2001
	US-2002/0028541	03/07/2002	Lee, T H., et al.	438	149	08/13/2001
	US-2003/0042527	03/06/2003	Forbes, Leonard , et al.	257	315	08/30/2001
	US-2003/0042532	03/06/2003	Forbes, Leonard	257	316	08/30/2001
CH	US-2003/0043622	03/06/2003	Forbes, Leonard	365	185.05	08/30/2001
	US-2003/0043630	03/06/2003	Forbes, Leonard , et al.	365	185.26	08/30/2001
	US-2003/0043632	03/06/2003	Forbes, Leonard	365	185.28	08/30/2001
	US-2003/0043633	03/06/2003	Forbes, Leonard , et al.	365	185.28	12/20/2001
	US-2003/0045082	03/06/2003	Eldridge, Jerome M., et al.	438	593	02/20/2002
	US-2003/0048666	03/13/2003	Eldridge, Jerome M., et al.	365	185.28	06/21/2002
CH	US-2004/0004245	01/08/2004	Forbes, Leonard , et al.	257	315	07/08/2002
	US-2004/0004247	01/08/2004	Forbes, Leonard , et al.	257	324	07/08/2002
	US-2004/0004859	01/08/2004	Forbes, Leonard , et al.	365	185.05	07/08/2002
	US-3,978,577	09/07/1976	Bhattacharyya, Arup , et al.	29	571	06/30/1975
	US-4,449,205	05/15/1984	Hoffman, Charles R.	365	182	02/19/1982
	US-4,495,219	01/22/1985	Kato, Takashi , et al.	427	82	10/08/1982
	US-4,717,943	01/05/1988	Wolf, Hans P., et al.	357	23.5	07/16/1986
	US-4,794,565	12/27/1988	Wu, Albert T., et al.	365	185	09/15/1986
	US-4,870,470	09/26/1989	Bass Jr., Roy S., et al.	357	23.5	10/16/1987
	US-5,445,984	08/29/1995	Gary, Hong , et al.	437	43	11/28/1994
	US-5,455,792	10/03/1995	Yi, Yong-Wan	365	185.12	09/09/1994
CH	US-5,510,278	04/23/1996	Bich-Yen, Nguyen , et al.	437	40	09/06/1994

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Substitute Disclosure Statement Form (PTO-1446)  
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Substitute for form 1448A/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (Use as many sheets as necessary)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">Complete if Known</td> </tr> <tr> <td style="width: 50%;">Application Number</td> <td>09/945,507</td> </tr> <tr> <td>Filing Date</td> <td>August 30, 2001</td> </tr> <tr> <td>First Named Inventor</td> <td>Forbes, Leonard</td> </tr> <tr> <td>Group Art Unit</td> <td>2824</td> </tr> <tr> <td>Examiner Name</td> <td>Dinh, Son</td> </tr> <tr> <td colspan="2">Attorney Docket No: 1303.014US1</td> </tr> </table>	Complete if Known		Application Number	09/945,507	Filing Date	August 30, 2001	First Named Inventor	Forbes, Leonard	Group Art Unit	2824	Examiner Name	Dinh, Son	Attorney Docket No: 1303.014US1	
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Attorney Docket No: 1303.014US1															

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 PATENT & TRADEMARK OFFICE

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	US-5,617,351	04/01/1997	Bertin, Claude L., et al.	365	185.05	06/05/1995
CA	US-5,646,430	07/08/1997	Kaya, Cetin, et al.	257	322	08/28/1995
	US-5,691,209	11/25/1997	Liberkowski, J B.	437	7	10/15/1996
	US-5,739,544	04/14/1998	Yuki, K, et al.	257	25	12/12/1995
	US-6,077,745	06/20/2000	Burns, Jr., S. M., et al.	438	270	10/29/1997
	US-6,101,131	08/08/2000	Chang, Ming-Bing	365	185.33	04/22/1999
	US-6,127,227	10/03/2000	Lin, Chrong J., et al.	438	261	01/25/1999
	US-6,135,175	10/24/2000	Gaudreault, P., et al.	144	4.1	10/19/1998
	US-6,169,306	01/02/2001	Gardner, Mark I., et al.	257	310	07/27/1998
	US-6,288,419	09/11/2001	Prall, Kirk D., et al.	257	213	07/09/1999
	US-6,306,708	10/23/2001	Peng, N	438	266	02/02/2000
CA	US-6,433,382	08/13/2002	Orlowski, M, et al.	257	315	04/06/1995

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Foreign Document No	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	T*

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume/issue number(s), publisher, city and/or country where published.	T*
CA		AARIK, JAAN, et al., "Anomalous effect of temperature on atomic layer deposition of titanium oxide", <u>Journal of Crystal Growth</u> , (2000), pp. 531-537	
		AFANAS, V., et al., "Electron energy barriers between (100)Si and ultrathin stacks of SiO <sub>2</sub> , Al <sub>2</sub> O <sub>3</sub> , and ZrO <sub>2</sub> insulators", <u>Applied Physics Letters</u> , 78(20), (2001), pp. 3073-3075	
		BHATTACHARYYA, A., "Physical & Electrical Characteristics of LPCVD Silicon Rich Nitride", <u>ECS Technical Digest, J. Electrochem. Soc.</u> , 131(11), 691 RDP, New Orleans, (1984), 469C	
		HAN, KWANGSEOK, "Characteristics of P-Channel Si Nano-Crystal Memory", <u>IEDM Technical Digest, International Electron Devices Meeting</u> , (December 10-13, 2000), 309-312	
		INUMIYA, S, et al., "Conformable formation of high quality ultra-thin amorphous Ta <sub>2</sub> O <sub>5</sub> gate dielectrics utilizing water assisted deposition (WAD) for sub 50 nm damascene metal gate MOSFETs", <u>IEDM Technical Digest, International Electron Devices Meeting</u> , (December 10-13, 2000), 649-652	
		MANCHANDA, L., "Si-doped aluminates for high temperature metal-gate CMOS: Zr-Al-Si-O, a novel gate dielectric for low power applications", <u>IEDM Technical Digest, International Electron Devices Meeting</u> , (December 10-13, 2000), 23-26	
SD		YAMAGUCHI, TAKESHI, "Band Diagram and Carrier Conduction Mechanism in ZrO <sub>2</sub> /Zr-silicate/Si MIS Structure Fabricated by Pulsed-laser-ablation	

EXAMINER SON DINH

DATE CONSIDERED 3/5/14

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	<b>Application Number</b> 09/945,507
	<b>Filing Date</b> August 30, 2001
	<b>First Named Inventor</b> Forbes, Leonard
	<b>Group Art Unit</b> 2824
	<b>Examiner Name</b> Dinh, Son
Sheet 3 of 3	Attorney Docket No: 1303.014US1

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.*	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T*
SN	X	Deposition*, <u>Electron Devices Meeting, 2000. IEDM Technical Digest, International, (2000), 19-22</u>	

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